## 13. Fan Coil Units with Duct Heater

**FCU-T04-17 - T04 Exp Showers Male Treatment**
**FCU-T04-19 - T04 Vitality Pool Male Treatment**
**FCU-T04-38 - T04 Exp Showers Female Treatment**
**FCU-T04-39 - T04 Vitality Pool Female Treatment**

### A) System Description

The system consists of a room thermostat with display, 3 speed fan, chilled water cooling coil with two port valve and a duct heater. System takes in treated fresh air.

### B) Fan control and monitoring

BMS shall control the FCU to maintain a space temperature of 23°C (adjustable from BMS PC).

BMS shall optimize the fan speed and the modulation of cooling valve such that the room temperature is achieved most efficiently.

A thermostat (QAX84.1) installed in the space shall relay space temperature to the DDC controller. A duct mounted Temperature and humidity sensor (QFM2160) installed in the return air duct to the fan coil unit shall relay the actual temperature and relative humidity to the DDC controller. It shall be possible to set a minimum and maximum change from the designed set point from the room thermostat. Thermostat which having a digital display and a temperature set point, On/Off and 4-position selector switch to provide auto, Low, Medium and High speeds.

When selected in Auto position the controller shall maintain the fan speed control where the set point is achieved as per the cooling demand. If the temperature continues to rise the controller shall select the higher fan speed to meet the additional cooling requirement. If the temperature falls below its set point the controller shall select the low fan speed.

The Fan Coil Unit DDC controller shall also be arranged to allow for remote control of the fan speed from the Building Management System.

### C) Temperature/Humidity Control and monitoring

There shall be a combined temperature & relative humidity sensor installed on return duct **(QFM2160).** Cooling coil valve shall be modulated as per PI (Proportional Integral) logic to maintain return air temperature at set point (23°C, adjustable from BMS workstation).

The DDC controller shall continuously monitor the return air relative humidity and on a demand for dehumidification the system will switch over to dehumidification Cycle by modulating the cooling valve as per PI (Proportional Integral) logic to maintain return air relative humidity at set point (50%

Rh, adjustable from BMS workstation). During this period, the temperature sensor shall sense an overcooling and cycle the thyristor controlling the electric heater battery to maintain the required return air temperature at set point (23°C, adjustable from BMS workstation).

The Fan Coil Unit DDC controllers shall also be arranged to allow for remote control and temperature indication from the Building Management System.